

Home Advantage in Basketball: a Longitudinal Analysis of the NBA Playoffs (1946-2022) Ventaja de local en el baloncesto: un análisis longitudinal de los playoffs de la NBA (1946-2022)

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Abstract. The aim of this study was to analyze the home advantage in the NBA playoffs from its first season, 1946/1947, to its most recent season, 2021/2022. All data was collected directly from the official NBA website. From each game we collected the season, name of the teams, final score, game location and playoff stage (first round, conference semi-finals, conference finals and finals). The home advantage was calculated as the number of home wins expressed as a percentage of all games played. We compare the HA between the seasons before and after 1965 using the Mann-Whitney test. The significance level was adopted at $p < 0.05$. From the analysis of 4,259 matches, we confirmed the HA in NBA playoffs showing that approximately 65% of the games played at home correspond to victory. In 73 seasons (96%) the home teams had an advantage playing at home. Two seasons were exceptions, the 1965/66 and 2019/20, being the only ones in history in which the visiting teams had a great advantage during the playoffs. We found a decrease in HA after 1965 and a smaller variation among the seasons. Lastly, we found no difference among the playoff stages. These findings provide important information for coaches and managers regarding the different strategies when playing at home or away during the NBA playoffs.

Key words: performance, competitiveness, match location, team sport, crowd effect

Resumen. El objetivo de este estudio fue analizar la ventaja de jugar en casa (VJC) en los playoffs de la NBA desde su primera edición, 1946/1947, hasta su temporada más reciente, 2021/2022. Todos los datos se recopilaron directamente del sitio web oficial de la NBA. De cada juego recopilamos la temporada, el nombre de los equipos, el puntaje final, la localización del juego y la etapa de los playoffs (primera ronda, semifinales de conferencia, finales de conferencia y finales). La VJC se calculó como el número de victorias en casa expresadas como porcentaje de todos los partidos jugados. Comparamos la HA entre las temporadas antes y después de 1965 utilizando la prueba de Mann-Whitney. El nivel de significación fue adoptado en $p < 0,05$. Del análisis de 4.259 partidos, confirmamos la VJC en los playoffs de la NBA mostrando que aproximadamente el 65% de los partidos jugados en casa corresponden a una victoria. En 73 temporadas (96%) los equipos locales tenían ventaja jugando en casa. Dos temporadas fueron excepciones, la 1965/66 y la 2019/20, siendo las únicas de la historia en las que los equipos visitantes tuvieron una gran ventaja durante los playoffs. Encontramos una disminución en VJC después de 1965 y una menor variación entre las estaciones. Por último, no encontramos diferencias entre las etapas de los playoffs. Estos hallazgos brindan información importante para entrenadores y gerentes con respecto a las diferentes estrategias cuando juegan en casa o fuera durante los playoffs de la NBA.

Palabras clave: rendimiento, competitividad, localización del partido, deporte de equipo, multitud

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Introduction

The Home Advantage (HA) is a well-established phenomenon and has attracted the attention of researchers, managers and coaches around the world (Harris & Roebber, 2019; Pollard et al., 2017). The HA reflects the better performance of the team or athlete when they compete at home compared to away matches. It is usually expressed as the number of points gained by the home teams in relation to the points gained considering all the matches (Gómez-Ruano & Pollard, 2021; Pollard & Pollard; 2005). Several factors have been investigated to explain this phenomenon revealing its multifactorial characteristic (Pollard, 2008; Pollard & Pollard; 2005). The crowd support is cited as the major factor that contributes to a better performance once the noise of the crowd may cause a referee bias and may also encourage and motivate the home team (Nevil & Holder; 1999; Pollard & Pollard; 2005, Sors et al., 2021). Other factors such as travel, familiarity with local conditions and territoriality are also cited as possible effects that benefit the performance at home (Pollard & Pollard; 2005).

The HA has already been investigated in several sports and football was the most studied so far (Pollard et al., 2017; Agular & Paulis, 2017; Barreira, 2018; Martínez & García, 2019). Still, there are some differences between

the sports that should be acknowledge. Recent studies have shown that sports played indoor, mainly basketball and handball, have the highest HA compared to other team sports (Pollard et al., 2017). According to the authors, in these sports the crowd is closer to the playing area and the noise from home support has an increased effect on players, officials and coaches. Although basketball and handball are played worldwide, the studies on HA in these sports are still scarce. In basketball, Pollard and Gómez (2011) investigated nine teams in Spain and found a HA of 63%. In other studies, the same authors investigated professional basketball leagues in Europe and, although they showed differences among them, they also confirmed the existence of HA in all of the leagues ranging from 72% to 50.5% with a mean of 60% (Gómez & Pollard, 2011; Pollard & Gómez, 2013).

The studies presented above reveal a great interest in the phenomenon in European basketball championships, indicating the need to complement the findings with other leagues and nationalities. Although the first studies on American basketball were conducted decades ago, they focused on college competitions (Greer, 1983; Snyder & Purdy, 1985; Varca, 1980). The studies on the National Basketball Association (NBA), the North American league and the major basketball league in the world, are recent and indicate gaps to be investigated. The visibility of the

NBA, its competitiveness and investments attract the attention of athletes from different nationalities who dream of playing in the league.

In one of the pioneer studies, Pollard and Pollard (2005) analyzed the HA in different sports in North-America. The study included the NBA seasons from 1946/47 to 2002/03. It is worth noting that in its first season, 1946/47, the league was called the Basketball Association of America and, after merging with the National Basketball League, it became NBA in 1949/50. After analyzing this historical period, the authors found that the NBA shows more changes in HA over the years than other sports. While the HA was about 70% until 1960, in the beginning of 2000 it has declined to 60%. García Rubio et al. (2015) provided more up-to-date data by investigating seven NBA seasons from 2007/08 to 2012/13. Besides the differences found between the conferences, the authors showed the effect of game attendance in home victories. In the next year, Ribeiro et al. (2016) studied HA in the NBA analyzing the microscopic dynamics of the game (that is, points, shots, passes) between 2001/02 and 2013/14 seasons. The authors found a higher rate (~ 0.13 points per minute) of scoring in home matches, but they showed that this number has decreased over the years. Harris and Roebber (2019) complemented these previous findings showing that teams that make more two point and free-throw have a larger advantage at home. At last, and more recently, HA was also studied in the Conference Finals and NBA Finals from 1979 to 2019 (Graham et al., 2021). This study found that there is a HA of $\sim 65\%$ and that, playing at home, fundamentals such as rebounds and stealing are more frequent.

Although these studies have presented interesting results on the HA in the NBA, some gaps still remain in the scientific literature. First, none of them specifically investigated the entire playoff phase, which may present a different behavior given the greater competitiveness between teams (Jamieson, 2010). Second, none of them investigated the phenomenon from the first season to the present day, thus being unable to analyze the performance of teams and HA over the years. Third, although the effect of the pandemic on fans and HA has already been investigated in NBA (Gong, 2022; Leota, Mascaro; 2021; Bustamante-Sánchez et al., 2022), the studies used data only from the 2019/20 season, being not possible to compare these data with the previous seasons. A longitudinal analysis would allow us to better understand the effects of the pandemic on the public and the performance of the teams. Therefore, the aim of this study was to analyze the home advantage in the NBA playoffs from its first edition, 1946/1947, to its most recent season, 2021/2022.

Methods

Sample

The NBA is composed of 30 teams divided into two conferences, the Eastern Conference and the Western

Conference. The competition is also divided into two parts, the regular season, in which each team plays 82 games against the other teams, and the playoffs, which is also known as the knockout phase. Currently, the playoffs are organized in first round, conference semifinals, conference finals and NBA finals, all rounds are played in a best-of-seven series.

We analyzed 4,259 NBA playoff games from the 1946/1947 season to the 2021/2022 season. We established the 1946/1947 season as the beginning of data collection, as it represents the first official NBA season. The last season collected (2021/2022) corresponds to the last one completed until the moment of this study. It should be noted that the playoff games for the 2019/2020 season were held without the presence of fans due to the COVID-19 pandemic.

Procedures for data collection

All data were collected directly from the official NBA website (www.nba.com). It was possible to access the league calendar and all the matches of each season. Results were collected from all playoff games from the 76 existing seasons to date. From each match, the following information was collected: name of the teams, final score, game location, playoff stage (first round, conference semifinals, conference finals and finals) and season.

Home advantage

In the NBA, the outcome of a game can only be victory or defeat. With that, the classification of the teams is precisely the number of wins and the number of defeats. The home advantage was calculated as the number of home wins, expressed as a percentage of all games played as proposed by previous studies (Pollard & Gómez, 2007). Therefore, to calculate the home advantage, the number of games won at home in the playoffs of each season was compared with the total number of games played in this specific playoff. So, if in the playoffs of the 2019/2020 season 39 games were won at home, out of a total of 83 games played, we have a home advantage of $39/83 = 47\%$. We conducted this process for all 76 seasons.

Data analysis

The data obtained were tabulated in a spreadsheet and exported to the SPSS program for the statistical analysis. Data normality was analyzed using the Shapiro-Wilk test. Once Pollard and Pollard (2005) have shown a change in HA from 1960 to 1970, we compare the HA between the seasons before and after 1965 using the Mann-Whitney test. The significance level was adopted at $p < 0.05$.

Results

Figure 1 presents the home playoff advantage across all NBA seasons. We noticed that in most seasons ($n=73$; 96%) teams won more games at home than away. Only in the 1965/66 and 2020/21 seasons we found a higher

winning rate in away games. Until 1965 we noticed that the home advantage was higher, with winning rates between 50% and 90%. However, from that decade onwards, we found a significant decrease in the home advantage (Figure 2), with a home winning rate between 50% to 70%.

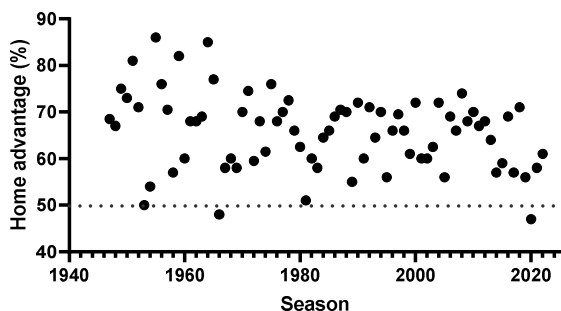


Figure 1. Home advantage, in the playoffs, throughout the NBA seasons.

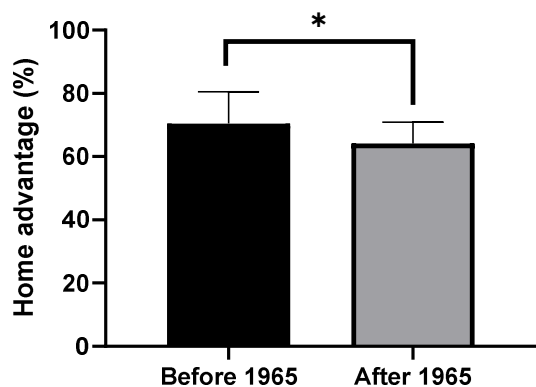


Figure 2. Home advantage, in the playoffs, before and after 1965. Legend: * significant difference in Mann-Whitney test ($p < 0.001$).

Table 1 shows the number of games played in the playoff stages of all seasons, the number of games won by the home teams and the HA. The number of games has decreased as the phases go by, as the teams are being eliminated. Even with that, the advantage of playing at home continues suffering small variations.

Table 1.

Home advantage in different stages of the NBA playoffs.			
Phase	Games	Wins	HA (%)
First Round	1886	1216	64%
Conference Semi Finals	1106	720	65%
Conference Finals	829	555	67%
Finals	438	271	62%

Discussion

The aim of this study was to analyze the home advantage in the NBA playoffs from 1946/47, when it was still the Basketball Association of America, to its most recent season, 2021/22. From the analysis of 4,259 matches, we confirmed the HA in NBA showing that approximately 65% of the games played at home correspond to a victory. Only in the 1965/66 and 2020/21 seasons we found a higher winning rate in away games. After 1965 we found a small variation of HA over the years and signif-

icant decrease compared to the previous decades. We found no difference in HA among the playoff stages.

Our results corroborate previous findings showing the HA (~65%) in the NBA games (Pollard & Pollard, 2005; García Rubio et al., 2015; Ribeiro et al., 2016; Graham et al., 2021). However, the lower HA found in our study compared to the previous ones (Pollard & Pollard, 2005) possibly reflects the greater competitiveness between the teams in the playoffs phase. Of the 76 seasons in 73 of them (96%) the home teams had an advantage (Figure 1). Two seasons are exceptions, the 1965/66 and 2019/20 seasons, being the only ones in history in which the visiting teams had a great advantage during the playoffs. Regarding the 1965/55 season, the NBA (2021) mentioned that this was an important season in the history of the league because two new coaches were hired in Baltimore and New York changing the way teams played and increasing the competitiveness of the league. These changes had an effect on the advantage of home teams once it was the season with lowest HA between the 50s and 90s (Pollard & Pollard, 2005).

The great advantage of the visiting teams in the 2019/2020 season was also found by previous studies that investigated the effects of COVID-19 pandemic on HA (Gong, 2022; Leota & Mascaro, 2021). During this season, the league was held in an isolated bubble without the presence of the public and, consequently, lacking the home team support. Therefore, the absence of the fans seems to be the main explanation for the lowest advantage of the home team during this season. These results corroborate previous findings showing that the presence of the public is one of the main factors influencing HA in team sports (Nevill & Holder; 1999; Pollard & Pollard; 2005; Sors et al., 2021).

We also found a significant decrease in HA from the 1960s onwards. Since the 1965/66 season new teams have begun to enter the league. While the league was disputed by nine teams before the 70s, nowadays there are 30 teams in the league. This increasing participation couple with the scientific advances may have led to a greater competitiveness. This result is in line with Pollard and Pollard (2005) that have also shown a decline in HA over the years considering the group stage and playoffs in NBA. At last, these findings corroborate that, in sports in general, the advantage for home teams was significantly greater before 1950 (Jamieson, 2010).

Although we found a decrease in HA over the years, the better performance of the home teams still exists. We also found that this advantage occurs in the different playoff phases (first round, conference semi-finals, conference finals and finals). These findings are important once the playoff stage is played in a best of 7 games in which the team with the best classification in the regular season plays 4 games at home, while its opponent plays only 3. With this in mind, teams with better ranking in the regular season have a greater chance of winning the series, as they will play more games at home.

In this study we provide a rich overview of HA in the NBA playoff games from its first to the most recent season. Still, the present findings can be complemented by studies that investigate game-related statistics over the years and their relation with the home and away matches. There is also a need to complement these findings investigating the competitiveness of the teams during the seasons and in the different stages of the playoff.

Conclusions

We confirmed the HA in NBA showing that approximately 65% of the games played at home correspond to a victory. After 1965 we found a small variation of HA over the years and significant decrease compared to the previous decades. Of the 76 seasons, only in two of them, the 1965/66 and 2019/20 season, the visiting teams had the advantage during the playoffs. This finding corroborates that the absence of the public during the 2019/20 season due to the COVID-19 was an important factor that promoted more balanced matches regardless the game location.

Declaration of conflicting interests

The authors declare no conflict of interest.

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